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 (71) 出願人(米国を除く全ての指定国について): 住友金属工業株式会社 (SUMITOMO METAL INDUSTRIES, LTD.) [JP/JP]; 〒5410041 大阪府大阪市中央区北浜4丁目5番33号 Osaka (JP). 住友鋼管株式会社 (SUMITOMO PIPE AND TUBE CO., LTD.) [JP/JP]; 〒3140014 茨城県鹿嶋市大字光3番地5号 Ibaraki (JP).
 (72) 発明者; および
 (75) 発明者/出願人(米国についてのみ): 奥井 達也 (OKUI,

Tatsuya) [JP/JP]; 〒5410041 大阪府大阪市中央区北浜4丁目5番33号 住友金属工業株式会社内 Osaka (JP). 黒田 浩一 (KURODA, Koichi) [JP/JP]; 〒5410041 大阪府大阪市中央区北浜4丁目5番33号 住友金属工業株式会社内 Osaka (JP).

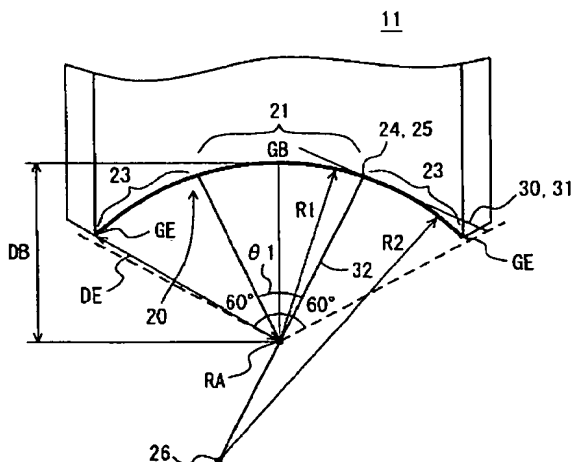
(74) 代理人: 上羽秀敏, 外(UEBA, Hidetoshi et al.); 〒5300043 大阪府大阪市北区天満2丁目2番1号 角野ビル4階 インテリクス国際特許事務所 Osaka (JP).

(81) 指定国(表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[続葉有]

(54) Title: TUBE REDUCING APPARATUS AND ROLL FOR TUBE REDUCING APPARATUS

(54) 発明の名称: 管の絞り圧延装置及び絞り圧延装置用ロール



(57) Abstract: A tube reducing apparatus, comprising a plurality of stands disposed along a rolling axis, wherein a tube is passed through the plurality of stands along the rolling axis for reducing. Each of the stands comprises rolls of (n) in quantity ($n \geq 3$) disposed around the rolling axis, and the rolls of (n) in quantity are displaced $180^\circ/n$ around the rolling axis from the rolls of (n) in quantity contained in the stand on a previous stage. Each of the rolls of (n) in quantity contained in the stands excluding the last stand comprises a groove of arch shape in cross section. The bottom part of the groove is formed in an arc shape having a first radius about the rolling axis in cross section, and a distance between the surface of a roll flange part positioned between the bottom part of the groove and the edge of the groove and the rolling axis is longer than the first radius, and a distance between the edge of the groove and the rolling axis is longer than the first radius at the groove of the roll contained in the stand on the previous stage. Accordingly, the tube reducing apparatus can suppress both the angulation of inner surfaces and the occurrence of damage to edges.

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添付公開書類:

— 国際調査報告書

(57) 要約: 本発明による絞り圧延装置は、圧延軸に沿って配列された複数のスタンドを備え、管を圧延軸に沿って複数のスタンドに通して絞り圧延する。スタンドの各々は、圧延軸の周りに配置された n 個 ($n \geq 3$) のロールを含み、 n 個のロールは前段のスタンドに含まれる n 個のロールから圧延軸周りに $180^\circ/n$ ずらして配置される。最後尾のスタンドを除くスタンドに含まれる n 個のロールの各々は、横断面で弓状をなす溝を有する。溝の底部は横断面で圧延軸を中心とした第1の半径を有する円弧をなし、溝の底部と溝の縁との間に位置するロールフランジ部の表面と圧延軸との間の距離は第1の半径よりも長く、溝の縁と圧延軸との間の距離は前段のスタンドに含まれるロールの溝における第1の半径よりも長い。そのため、本発明による絞り圧延装置は、内面角張とエッジきずの発生とをともに抑制できる。

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2005/000704

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl ⁷ B21B17/14, 27/02										
According to International Patent Classification (IPC) or to both national classification and IPC										
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl ⁷ B21B17/14, 27/02										
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched <table border="0"> <tr> <td>Jitsuyo Shinan Koho</td> <td>1922-1996</td> <td>Jitsuyo Shinan Toroku Koho</td> <td>1996-2005</td> </tr> <tr> <td>Kokai Jitsuyo Shinan Koho</td> <td>1971-2005</td> <td>Toroku Jitsuyo Shinan Koho</td> <td>1994-2005</td> </tr> </table>			Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2005	Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005
Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2005							
Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005							
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)										
C. DOCUMENTS CONSIDERED TO BE RELEVANT										
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.								
Y	JP 2000-334504 A (Sumitomo Metal Industries, Ltd.), 05 December, 2000 (05.12.00), Claim 1; Par. No. [0035]; table 2 (Family: none)	1-7								
X Y	JP 6-210318 A (Sumitomo Metal Industries, Ltd.), 02 August, 1994 (02.08.94), Par. Nos. [0036], [0041], [0043]; Figs. 4 to 5 & US 5533370 A1	8-11, 14 1-7, 12								
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.										
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Date of the actual completion of the international search 13 April, 2005 (13.04.05)		Date of mailing of the international search report 26 April, 2005 (26.04.05)								
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer								
Facsimile No.		Telephone No.								

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2005/000704

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	✓ JP 4-158907 A (Kawasaki Steel Corp.), 02 June, 1992 (02.06.92), Page 2, lower right column, line 13 to page 3, upper left column, line 3; Fig. 4 (Family: none)	13 1-7, 12
Y	✓ JP 2000-51904 A (Sumitomo Metal Industries, Ltd.), 22 February, 2000 (22.02.00), Par. No. [0025] (Family: none)	1-14